

SUPPORT FOR THE AMENDMENT

Support for the amendment to claim 14 is found in claims 5 and 18 as originally presented. No new matter would be added to this application by entry of this amendment.

Upon entry of this amendment, claims 1-21 will remain active in this application with claims 14-16 and 20-24 being under active consideration.

REQUEST FOR RECONSIDERATION

The claimed invention is directed to a laser marking method of a rubber-reinforced thermoplastic resin.

Laser marking techniques of molded articles have been reported and can provide for revealing an embedded coloring material by discoloring a colorant through laser beam irradiation. Marking of rubber-reinforced thermoplastic resins can present interesting challenges due to the propensity of such resins to foam when irradiated with laser light.

The claimed invention provides for a laser marking method of a rubber-reinforced thermoplastic resin by irradiating a molded article with **two or more laser beams** having different energy, wherein a composition for multicolor laser marking comprises a chromatic coloring agent of specified structure and properties and a black substance which is depleted or discolored by laser beam, **wherein the color tone arises from a white color associated with the polymer and a chromatic coloring agent**. Applicants have discovered that laser marking of such a rubber-reinforced thermoplastic resin provides for a vivid marking, in-part due to the foaming properties of the rubber-reinforced thermoplastic resin. Such a method is nowhere disclosed or suggested in the cited art of record.

The rejection of claims 14-16 and 20-24 under 35 U.S.C. §103(a) over Ito et al. U.S. 2002/0052438, in view of Feng et al. U.S. 5,977,514 as evidenced by Wypych is respectfully traversed.

None of the cited art of record discloses a method in which the color tone arises from a white color associated with the polymer and a chromatic coloring agent.

Ito et al. discloses a process in which **a single laser irradiation** is used to produce a single color. The plastic composition contains at least one black system (B) and a dye and/or organic pigment (C). While the mechanism of developing chromatic color has not been completely elucidated, the inventors theorize that the obscuring properties of the black

system are removed as a result of either vaporization or a change in the refractive index of the thermoplastic resin as a result of absorption of laser light, allowing the innate chromatic color to be recognized (paragraphs [0066]-[0068]). Thus, the method of Ito et al. uses a **single** laser beam to reveal a **single innate chromatic color**.

In contrast, the claimed method is directed to a laser marking method of a rubber-reinforced thermoplastic resin in which **two or more laser beams** having different energy levels are used and wherein **the color tone arises from a white color associated with the polymer and a chromatic coloring agent**. Applicants note that the claims have been amended to recite that the color tone arises from a white color associated with the polymer and a chromatic coloring agent. When irradiated with laser light, such a polymer can form a foaming part, having a different refractive index than that of the non-irradiated portion. Such a contrast in refractive index provides for a highly vivid marking as described in paragraph [0037] of applicant's specification. As the cited reference fails to suggest that the color tone arises **from a white color associated with the polymer and a chromatic coloring agent**, the claimed invention is not suggested.

The basic deficiencies of the primary reference are not cured by Feng et al.

Feng et al. disclose a laser marking method in which laser beams from two different energy levels are used (column 9, lines 14-20). The method forms light and dark laser marks through charring and/or forming of the resin (see abstract). In one embodiment, an inorganic color pigment is employed that has an original color that chemically and irreversibly changes to a different color when exposed to a threshold temperature that is higher than the temperature required to vaporize or decolorize a masking pigment such as carbon black (column 8, lines 45-55). In no event is a white color primarily an inherent color of the polymer or derived from foaming of the polymer. In fact, mica, a white pigment is added to

the composition (page 4, lines 17-24 of official action). Thus, since a white pigment is added, a white color is not primarily an inherent color of the polymer.

Moreover, while a “white mark color” is identified from compositions #16 and 17 in table 1, such compositions are formulated with talc, a white pigment, indicating that a white is not primarily an inherent color of the polymer.

In view of the cited combination of references failing to disclose or suggest white as primarily an inherent color of the polymer or derived from foaming of the polymer, the claimed invention would not have been obvious from the cited combination of references.

No Motivation To Combine Disclosures Of Ito With Feng

Not notwithstanding the deficiencies of the combined disclosures to suggest white as primarily an inherent color of the polymer or derived from foaming of the polymer, there would be no motivation to combine the two disclosures as the two disclosures are incompatible.

Ito states that the chromatic color is present in the irradiated part yet **remains unchanged** as it does not absorb laser light (paragraph [0067]). In contrast, the colorant of Feng et al. undergoes a **color change upon irradiation** (column 9, lines 14-22). Since the colorant of Ito is not changed by irradiation but the colorant of Feng et al. is changed upon irradiation, one of ordinary skill in the art would not be motivated to combine the disclosures of the two references in view of the fundamental differences in operation of the colorant.

How could it be obvious combine a process in which a colorant **changes color** upon irradiation with a process in which a colorant **does not change** color upon irradiation? Notwithstanding that both references describe laser marking processes, there simply would have been no motivation to make the proposed combination in view of the different modes of operation.

In view of the deficiencies of the cited reference to disclose or suggest using at least two lasers and that the color tone arises from a white color associated with the polymer and a chromatic coloring agent, the claimed invention is not rendered obvious by the cited reference and withdrawal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

The provisional rejection of claims 1-6, 8, 10-11 and 14-18 on the grounds of nonstatutory obviousness-type double patenting over claims 1-4, 6 and 8 of co-pending application 11/889,207 is noted. Applicants confirm that the assignee of the above-identified application is identical with the assignee of U.S. 11/889,207 and was so at the time the invention of this application was made. Applicants further note that applicants' PCT filing date of JP 05/00312 of January 13, 2005 is **before the PCT filing date of U.S. 11/880,207** of February 10, 2006 such that issuance of the above-identified application would **not result in an undue extension of patent term** relative to any patent issuing from U.S. 11/889,207. None, the less as a provisional rejection, should this be the sole remaining issue, applicants respectfully request that the provisional rejection be deferred and addressed during prosecution of the later filed application, U.S. 11/889,207.

Applicants submit that this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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